

- 7) Determine the antenna placement in the stock room. The standard locations for the antennae are:
 - Rx-16 should be located near the receiving door at the start of the conveyor belt.
 - Tx-4 should be over the floor about half way down the conveyor belt (approximately half way between Rx 15 and Rx 16)
 - Rx-15 is at the opposite end of the conveyor belt.
 - Antennae placement in the stock room must comply with the following rules:
 - The antenna must have a clean line of sight to the floor.
 - The Tx/ATA must be attached to a roof girder using cable ties.
 - The Rx/ARA can be either attached to a roof girder with cable ties or suspended using plastic plumber's strap.
 - There must be a minimum 10 foot distance between the antennas.
 - The antennae can not touch conduit or pipes.
 - The antennae should be over a normal walking path.
- 8) When determining the antennae placement in the stock room, verify what ladders the store has available. These ladders are not to be used during the installation. This is information that is needed during your check-out call with the Help Desk. Normally a store will have a 10' Platform ladder and may also have a 10' or 12' step ladder. They are normally kept in the stock room.
- 9) If you need additional information on determining antennae placement contact the Help Desk.

Determine the Cable Pulls:

After completing the other components of the Pre-Installation Store Survey, then determine the cable lengths and how to pull the coaxial cables in the store. Please review the *Cable Pull section* in this guide for more detailed information on pulling the cables. Factors that must be considered when determining your cable pulls are:

- 1) Minimize the number of cables pulls. For example, all the cables including power that go to the front of the store should be one cable pull, the cables going to the back of the store would be another pull and then the center of the store would be two pulls.
- 2) Determine the length of coaxial cable required for each antenna to reach the MEU. This information will help determine how to label each cable.
- 3) Determine any obstructions in the ceiling that would prevent hinder or alter a cable pull.
- 4) The cable pulls should occur in the following sequence:
 - The cable pull that includes the power for the MEU should always be the first pull.
 - The cable pull that includes the stock room should be your second pull.
 - All other remaining cable pulls.
- 5) Cables must comply with National Electric Code (NEC) current new construction standards.
- 6) The installation of the cables must comply with the standards defined in the following table:

Issue	Cable Tied to	Touching	Avoid
All pipes especially water pipes	Never	Never	Yes
Threaded pipe supports	Never	Never	Yes
Electrical Conduit	Never	Yes	Yes
Ceiling Grid Wires	Never	Never	Yes
HVAC Duct	Never	Yes	Yes
Ceiling Tiles	Never	Never	Yes

Pre-Installation Store Survey Check Off Form

Pre-Installation Store Survey Check Off Form		
Status	Process	Task
	CMU	
		Determine the CMU location
		Determine the location of uninterrupted power for the CMU.
		Determine the location of the network connection.
	Primary MEU	
		Determine the location of uninterrupted power for the MEU.
		Determine the access for the power cable to the power location.
		Determine the MEU location.
		Determine the mounting method for the MEU.
		Determine the distance from the MEU to Tx/ATA and Rx/ARA Antennae locations.
		Determine any issues including obstructions in the ceiling.
		Determine ceiling height and roof girder height above ceiling grid.
	Second MEU	
		Determine if a second MEU is required
		If needed, determine the location of the 24-hour uninterrupted power for the second MEU and the location and mounting method for the second MEU.
	Antennae Placement	
		Determine the location of each Tx/ATA and Rx/ARA Antennae.
		Mark the location on the floor of each Tx/ATA and Rx/ARA Antennae
		Determine the length of coaxial cable for each antenna
		Determine if the Rx/ARA antennas can be placed close to the mirrors in the back of the store, if the mirrors are present.
		Determine the access point for the cables to the stock room.
	Cable Pulls	
		Determine all of your cable pulls.
		Determine the sequence of your cable pulls.

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Installation:

The following workflow is only a suggested division of labor and flow of the work during an installation. Each installation crew can adjust the tasks for each member to be more efficient for that team. This example is for a back stockroom. The stock room cables would be pulled with the back pull. If you have a side stock room the center pull including the stock room should be the second pull completed.

Sample Workflow of Installation with Two Technicians		
Tasks	Lead Technician	Second Technician
	Check-in with Store Management and Goliath Help Desk.	Check-in with Store Management and Goliath Help Desk.
	Locate and verify Goliath Solutions equipment	Bring the installation tools and supplies into the store
	Pre-installation Store Survey (determine equipment locations and installation issues)	Unpack and inventory equipment
		Label the cables
	Install CMU – mounting, power and communications. At the CMU location temporarily connect the MEU to power on the CMU and contact the Help Desk run a system test.	Dispose of empty boxes and installation material from the installation prep.
	Pull cables for front of store to the permanent MEU location and install associated Tx/ATA and Rx/ARA antennas.	Pull Cables for back of store to the permanent MEU location and install associated Tx/ATA and Rx/ARA antennas.
	Install MEU in permanent location after completion of system test.	
	Pull cables for center of store to permanent MEU location and install associated Tx/ATA and Rx/ARA antennas.	Pull cables into Stock Room and install associated Tx/ATA and Rx/ARA antennas.
	Connect pulled cables to MEU	
	After all cables are connected to MEU and the associated antennas, power on the MEU.	Clean-up any debris left from the installation.
	Contact Goliath Solutions Help Desk for check-out and final testing.	Remove installation tools and left-over supplies & equipment from the store.
	Check-out with Store Management	Check-out with Store Management

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Installation Prep:

- 1) Unpack the Installation Kit and review its contents.
- 2) Sort the installation kit into the following categories:
 - Rx/ARA Antennas
 - Tx/ATA Antennas
 - CMU
 - MEU
 - Power Supplies and power cables
 - 25 foot cables
 - 50 foot cables
 - 85 foot cables
 - 110 foot cables
- 3) Place a corresponding grid label on the side of each Rx/ARA that will be installed in the store. The grid label will be installed on the ceiling grid when the antenna is installed. You can also attach the Xmas tree fastener so all the items needed to install the Rx/ARA is in one location.

GolSol 1 ↑
GolSol 2 ↑
GolSol 3 ↑
GolSol 4 ↑
GolSol 5 ↑
GolSol 6 ↑
GolSol 7 ↑

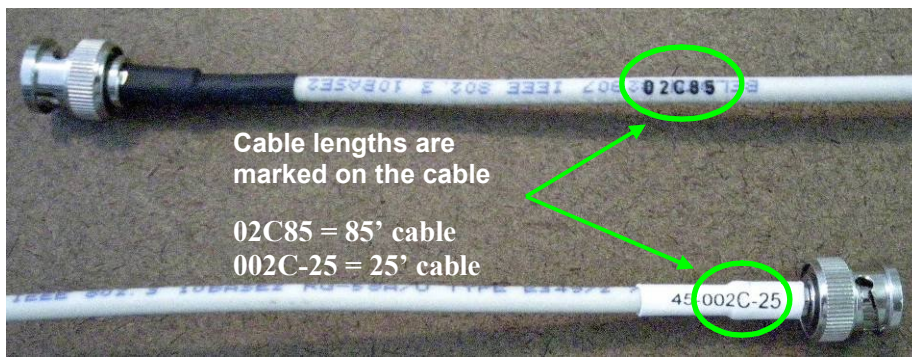
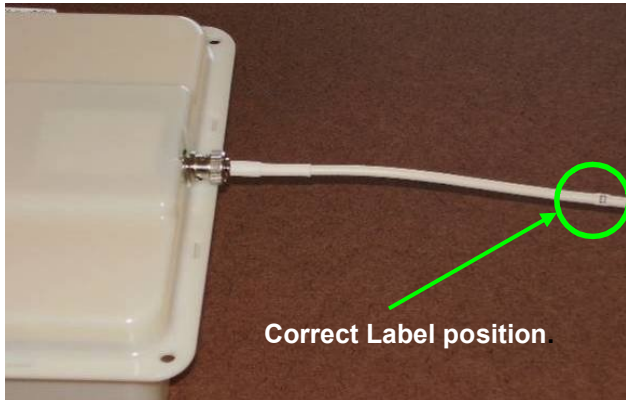


- 4) Verify you have received the equipment listed on the packing slip and none of the equipment is damaged.
- 5) Notify the Help Desk of any damaged or missing equipment during the check-in call.
- 6) After the completion of the Pre-installation survey begin labeling the cables with the labels provided for installation. The length of the cables should have been determined during the Pre-installation Store Survey.
 - All coaxial cables must be labeled at both ends.
 - Labels should be 6 inches from the cable end.

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Cable labels



A grid of 16 rows and 16 columns of numbers, used for labeling cables. The numbers are arranged in a specific pattern across the grid.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

- 7) As the cables are being labeled place all the cables and the associated Rx/ARA and Tx/ATA antennas for a cable pull in one pile. For example a 10 aisle store with a back stock room may require four cable pulls. The equipment would be sorted into 4 groups that correspond to the cable pulls for the store. The groups would be:

Front Pull: Power cable, Cables 1, 3, 4, 13 and 21, 1 Tx/ATA and 4 Rx/ARA antennas with grid labels GoISol 1, GoISol 3, GoISol 4 and GoISol 13

Back Pull: Cables 9, 10, 11, 12, 23, 15, 16, 34, 2 Tx/ATA and 6 Rx/ARA antennas with grid labels GoISol 9, GoISol 10, GoISol 11, GoISol 12, GoISol 15 and GoISol 16

Middle Pull 1: Cables 2, 5, 6, 22, 1 Tx/ATA and 3 Rx/ARA antennas with grid labels GoISol 2, GoISol 5 and GoISol 6

Middle Pull2: Cables 7, 8, and 2 Rx/ARA antennas with grid labels GoISol 7 and GoISol 8

- 8) With the equipment prepped and sorted based on the cable pulls, then CIT can take the equipment required for the cable pull they are working on and position that equipment in the appropriate location for installation. They will also need to take Xmas tree fasteners (for the Rx/ARA) and rubber collars/gaskets (for the Tx/ATA).

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The following table is an **EXAMPLE** of typical cable lengths and corresponding labels. This example shows how the cable lengths to each antenna will change in the same store based upon the location of the MEU and the power source location. The labels for the cable should always represent the mapped location on the floor plan for each antenna. The example below is a 10 aisle store with a back stock room.

- **Example 1** – MEU mounted on a post in aisle 4 near the center of store and the MEU power location is at the front security screen near the entrance.
- **Example 2** – MEU mounted on a post in aisle 9 near the center of store and the MEU power location is the CMU installed in Photo.

ITEM	MEU PORT	Example 1 = MEU mounted in aisle 4 Cable Lengths	Example 2 = MEU mounted in aisle 9 Cable Lengths	LABEL
Rx-1	RX1	110	110 or 135	1
Rx-2	RX2	85	85	2
Rx-3	RX3	85	110	3
Rx-4	RX4	110	85	4
Rx-5	RX5	50	85	5
Rx-6	RX6	25	50	6
Rx-7	RX7	50	25	7
Rx-8	RX8	85	25	8
Rx-9	RX9	110	110	9
Rx-10	RX10	85	110	10
Rx-11	RX11	85	85	11
Rx-12	RX12	110	85	12
Rx-13	RX13	85	85	13
Rx-14	RX14	110	85	14
Rx-15	RX15	110	110	15
Rx-16	RX16	110	110	16
Tx-1	TX1	85	110	21
Tx-2	TX2	25	50	22
Tx-3	TX3	85	85	23
Tx-4	TX4	110	110	24

Note: The current standard coaxial cable lengths are 25 feet, 50 feet, 85 feet and 110 feet. Each cable has a label near the cable connector listing the cable length.

CMU Installation:

- 1) The CMU will be the first device installed. **Do not install the antennas on the CMU and MEU until the completion of the system test by the Help Desk.**



- 2) Mount the CMU on the wall at the location designated during the Pre-installation survey using the following instructions:
 - a) Hold the CMU on the wall at the designated location and mark the location of the mounting brackets with a pencil. The brackets require two screws.
 - b) If the CMU is mounted on a sheet rock wall use plastic anchors along with the two screws to mount it,
 - c) If the CMU is mounted on wood like the yellow storage closet, install two screws directly into the wood.
 - d) Hang the CMU on the wall by placing the mounting brackets on the installed screws. The screw heads should be out from the wall approximately a 1/8 inch to hang the CMU on.

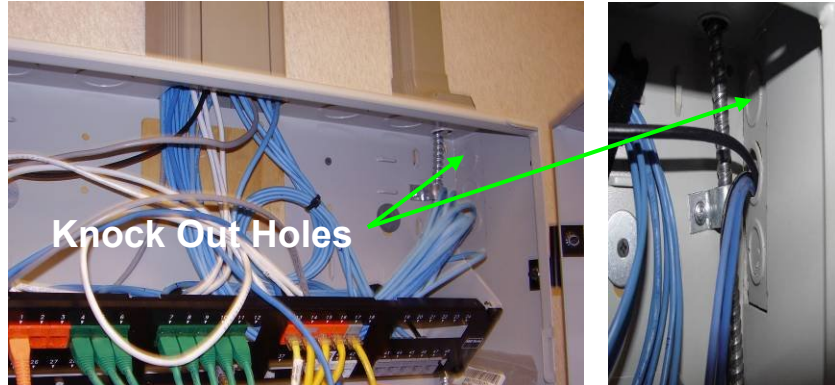


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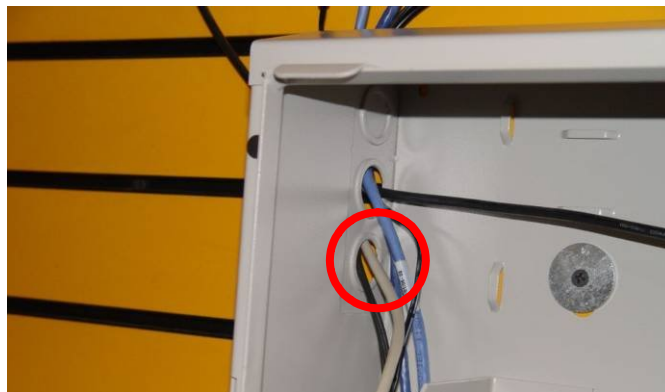
Do not unplug any power cords or network patch cables in either the Catalina Cabinet or the free standing Communications cabinet.

3) This step is only required for a Catalina cabinet,

- a) If the CMU is located in the Pharmacy proceed to step 4.
- b) Open the Catalina cabinet.
- c) Open the knock out hole selected during the pre-installation survey. The knock out hole must be on either side of the cabinet.



- d) Place the Power brick and the 6 foot power cord inside the Catalina cabinet. Plug the power cable into the power brick. Do not plug the power cable into the designated power outlet at this time.
- e) Pull the CMU/MEU low voltage end of the power brick from the inside of the cabinet through the knock out and connect it to the input power port on the CMU. Be certain that the CMU power switch on the CMU is in the OFF position.



- f) Connect the provided network patch cable to the designate port on the switch, then pull it through the knock out hole and connect it to the CMU. If a network data sheet is inside the communication cabinet record the port used by Goliath.

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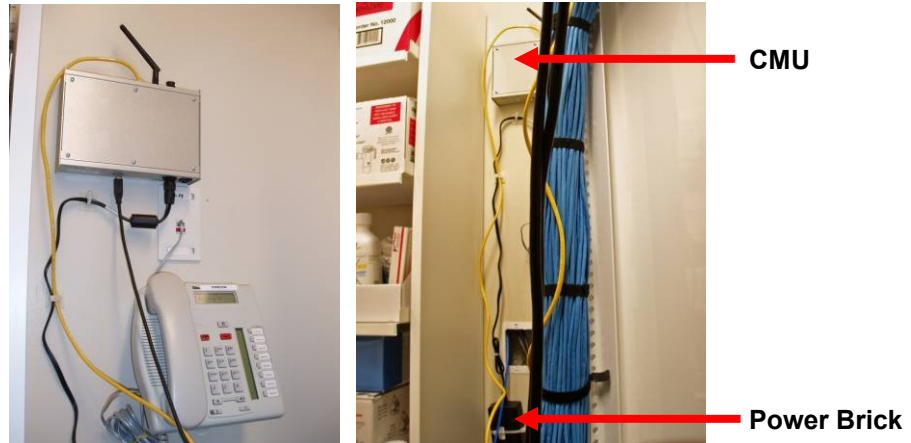
Port	Location that cable goes to	Port	Location that cable goes to
2.1	Photocopy Cabinet / Task Order Room	2.12	Photo Reg. 3 POS
2.2	Photocopy Cabinet / Task Order Room	2.13	Photo Reg. 3 POS
2.3	Photocopy Cabinet / Task Order Room	2.14	Photo Reg. 3 POS
2.4	Self-Serve Reg. 1 POS	2.15	Photo Reg. 3 POS
2.5	Self-Serve Reg. 1 POS	2.16	Photo Reg. 3 POS
2.6	Self-Serve Reg. 1 POS	2.17	Photo Reg. 3 POS
2.7	Self-Serve Reg. 1 POS	2.18	Photo Reg. 3 POS
2.8	Self-Serve Reg. 1 POS	2.19	Photo Reg. 3 POS
2.9	Self-Serve Reg. 1 POS	2.20	Photo Reg. 3 POS
2.10	Self-Serve Reg. 1 POS	2.21	Photo Reg. 3 POS
2.11	Self-Serve Reg. 1 POS	2.22	Photo Reg. 3 POS
2.12	Self-Serve Reg. 1 POS	2.23	Photo Reg. 3 POS
2.13	Self-Serve Reg. 1 POS	2.24	Photo Reg. 3 POS
2.14	Self-Serve Reg. 1 POS	2.25	Photo Reg. 3 POS
2.15	Self-Serve Reg. 1 POS	2.26	Photo Reg. 3 POS
2.16	Self-Serve Reg. 1 POS	2.27	Photo Reg. 3 POS
2.17	Self-Serve Reg. 1 POS	2.28	Photo Reg. 3 POS
2.18	Self-Serve Reg. 1 POS	2.29	Photo Reg. 3 POS
2.19	Self-Serve Reg. 1 POS	2.30	Photo Reg. 3 POS
2.20	Self-Serve Reg. 1 POS	2.31	Photo Reg. 3 POS
2.21	Self-Serve Reg. 1 POS	2.32	Photo Reg. 3 POS
2.22	Self-Serve Reg. 1 POS	2.33	Photo Reg. 3 POS
2.23	Self-Serve Reg. 1 POS	2.34	Photo Reg. 3 POS
2.24	Self-Serve Reg. 1 POS	2.35	Photo Reg. 3 POS
2.25	Self-Serve Reg. 1 POS	2.36	Photo Reg. 3 POS
2.26	Self-Serve Reg. 1 POS	2.37	Photo Reg. 3 POS
2.27	Self-Serve Reg. 1 POS	2.38	Photo Reg. 3 POS
2.28	Self-Serve Reg. 1 POS	2.39	Photo Reg. 3 POS
2.29	Self-Serve Reg. 1 POS	2.40	Photo Reg. 3 POS
2.30	Self-Serve Reg. 1 POS	2.41	Photo Reg. 3 POS
2.31	Self-Serve Reg. 1 POS	2.42	Photo Reg. 3 POS
2.32	Self-Serve Reg. 1 POS	2.43	Photo Reg. 3 POS
2.33	Self-Serve Reg. 1 POS	2.44	Photo Reg. 3 POS
2.34	Self-Serve Reg. 1 POS	2.45	Photo Reg. 3 POS
2.35	Self-Serve Reg. 1 POS	2.46	Photo Reg. 3 POS
2.36	Self-Serve Reg. 1 POS	2.47	Photo Reg. 3 POS
2.37	Self-Serve Reg. 1 POS	2.48	Photo Reg. 3 POS
2.38	Self-Serve Reg. 1 POS	2.49	Photo Reg. 3 POS
2.39	Self-Serve Reg. 1 POS	2.50	Photo Reg. 3 POS
2.40	Self-Serve Reg. 1 POS	2.51	Photo Reg. 3 POS
2.41	Self-Serve Reg. 1 POS	2.52	Photo Reg. 3 POS
2.42	Self-Serve Reg. 1 POS	2.53	Photo Reg. 3 POS
2.43	Self-Serve Reg. 1 POS	2.54	Photo Reg. 3 POS
2.44	Self-Serve Reg. 1 POS	2.55	Photo Reg. 3 POS
2.45	Self-Serve Reg. 1 POS	2.56	Photo Reg. 3 POS
2.46	Self-Serve Reg. 1 POS	2.57	Photo Reg. 3 POS
2.47	Self-Serve Reg. 1 POS	2.58	Photo Reg. 3 POS
2.48	Self-Serve Reg. 1 POS	2.59	Photo Reg. 3 POS
2.49	Self-Serve Reg. 1 POS	2.60	Photo Reg. 3 POS
2.50	Self-Serve Reg. 1 POS	2.61	Photo Reg. 3 POS
2.51	Self-Serve Reg. 1 POS	2.62	Photo Reg. 3 POS
2.52	Self-Serve Reg. 1 POS	2.63	Photo Reg. 3 POS
2.53	Self-Serve Reg. 1 POS	2.64	Photo Reg. 3 POS
2.54	Self-Serve Reg. 1 POS	2.65	Photo Reg. 3 POS
2.55	Self-Serve Reg. 1 POS	2.66	Photo Reg. 3 POS
2.56	Self-Serve Reg. 1 POS	2.67	Photo Reg. 3 POS
2.57	Self-Serve Reg. 1 POS	2.68	Photo Reg. 3 POS
2.58	Self-Serve Reg. 1 POS	2.69	Photo Reg. 3 POS
2.59	Self-Serve Reg. 1 POS	2.70	Photo Reg. 3 POS
2.60	Self-Serve Reg. 1 POS	2.71	Photo Reg. 3 POS
2.61	Self-Serve Reg. 1 POS	2.72	Photo Reg. 3 POS
2.62	Self-Serve Reg. 1 POS	2.73	Photo Reg. 3 POS
2.63	Self-Serve Reg. 1 POS	2.74	Photo Reg. 3 POS
2.64	Self-Serve Reg. 1 POS	2.75	Photo Reg. 3 POS
2.65	Self-Serve Reg. 1 POS	2.76	Photo Reg. 3 POS
2.66	Self-Serve Reg. 1 POS	2.77	Photo Reg. 3 POS
2.67	Self-Serve Reg. 1 POS	2.78	Photo Reg. 3 POS
2.68	Self-Serve Reg. 1 POS	2.79	Photo Reg. 3 POS
2.69	Self-Serve Reg. 1 POS	2.80	Photo Reg. 3 POS
2.70	Self-Serve Reg. 1 POS	2.81	Photo Reg. 3 POS
2.71	Self-Serve Reg. 1 POS	2.82	Photo Reg. 3 POS
2.72	Self-Serve Reg. 1 POS	2.83	Photo Reg. 3 POS
2.73	Self-Serve Reg. 1 POS	2.84	Photo Reg. 3 POS
2.74	Self-Serve Reg. 1 POS	2.85	Photo Reg. 3 POS
2.75	Self-Serve Reg. 1 POS	2.86	Photo Reg. 3 POS
2.76	Self-Serve Reg. 1 POS	2.87	Photo Reg. 3 POS
2.77	Self-Serve Reg. 1 POS	2.88	Photo Reg. 3 POS
2.78	Self-Serve Reg. 1 POS	2.89	Photo Reg. 3 POS
2.79	Self-Serve Reg. 1 POS	2.90	Photo Reg. 3 POS
2.80	Self-Serve Reg. 1 POS	2.91	Photo Reg. 3 POS
2.81	Self-Serve Reg. 1 POS	2.92	Photo Reg. 3 POS
2.82	Self-Serve Reg. 1 POS	2.93	Photo Reg. 3 POS
2.83	Self-Serve Reg. 1 POS	2.94	Photo Reg. 3 POS
2.84	Self-Serve Reg. 1 POS	2.95	Photo Reg. 3 POS
2.85	Self-Serve Reg. 1 POS	2.96	Photo Reg. 3 POS
2.86	Self-Serve Reg. 1 POS	2.97	Photo Reg. 3 POS
2.87	Self-Serve Reg. 1 POS	2.98	Photo Reg. 3 POS
2.88	Self-Serve Reg. 1 POS	2.99	Photo Reg. 3 POS
2.89	Self-Serve Reg. 1 POS	3.00	Photo Reg. 3 POS

- g) Plug the CMU/MEU power supply cable into the designated 2-hour uninterrupted power outlet. Be certain the CMU power switch is in the OFF position.
- h) Proceed to Step 5.



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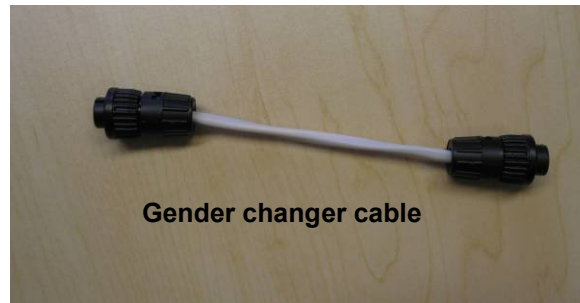
- 4) **This step is only required with a free standing communications cabinet in the Pharmacy.**
- a) Follow the Pharmacy access policy located in Chapter 1 under the Walgreens Environment Section. **The CIT must always be escorted by a Pharmacist when in the Pharmacy.**
 - b) Open the communications cabinet.
 - c) Install the Power brick and the 6 foot power cord at a location that will reach the CMU location and the dedicated 24-hour power outlet. Plug the power cable into the power brick. Do not plug the power cable into the designated power outlet at this time.



- d) Pull the CMU/MEU low voltage end of the power brick to the CMU location and connect it to the input power port on the CMU. **Be certain that the CMU power switch is in the OFF position.**
 - e) Connect the provided network patch cable to the CMU and then to the designated port on the switch. If the designated on the switch is not available, then just connect the network patch cable to the CMU. A tech from Walgreens will connect the patch cable to the switch..
 - f) Plug the CMU/MEU power supply cable into the designated 24-hour uninterrupted power outlet. **Be certain that the CMU power switch is in the OFF position.**
- 5) Temporally place the MEU near the CMU location.
- 6) Using a 12 foot CMU/MEU power cable from the Hot Spare Kit and the gender changer cable connect the power cable to the output power port on the CMU and the MEU power input port.

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- 7) Power on the CMU and MEU and observe the lights on the CMU and MEU. Initially the ASC light will be on solid amber for about 15 seconds and then it will flash about every 30 seconds. When ASC light is flashing it indicates the CMU and MEU are communicating correctly.

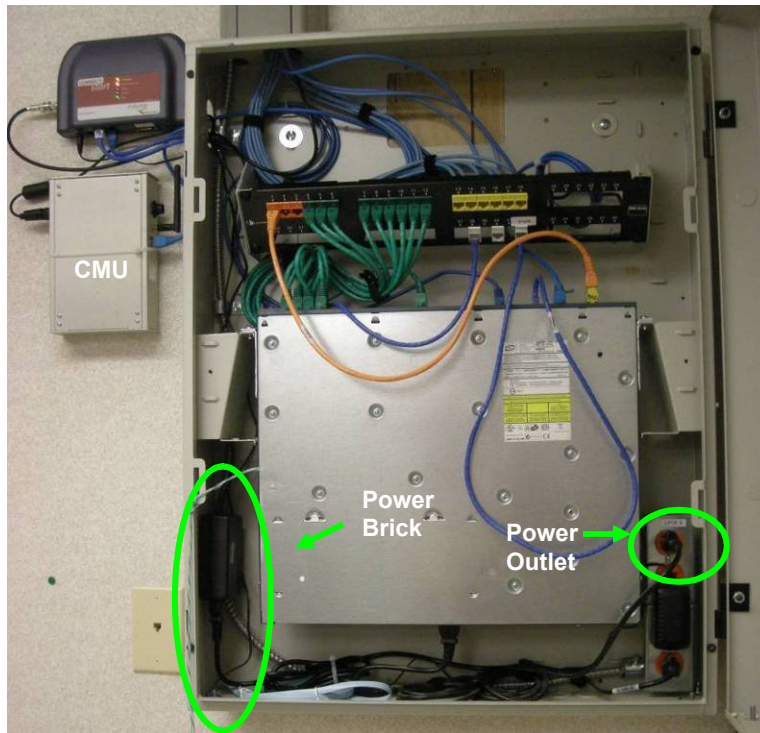


- 8) The ON light on the CMU should be a solid green. If it is flickering check the power brick and verify the light on the brick is solid green. If the light on the power brick is flickering the power brick is bad and it must be replaced. **If the CMU is located in the Pharmacy, then disconnect the MEU and proceed to Step 12.**
- 9) If the power brick is good then Velcro the power brick on the side, inside the communications cabinet. The following picture shows how the brick is installed in a Catalina cabinet.

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- 10) The Help Desk will now perform the system test with the CMU and MEU while you continue the installation.
- 11) The Help Desk will call you upon completion of their system test. The MEU can then be powered down, disconnected from the CMU and moved to its permanent location any time after the completion of the system test.
- 12) After the MEU is disconnected and powered down, then install the antennas on the CMU and MEU. **Never install the Antennas on the CMU and MEU when both devices are near each other and powered on.**

At the completion of the test return any spare CMU/MEU power cables to the Hot Spare Kit and the MEU can be installed at its permanent location.

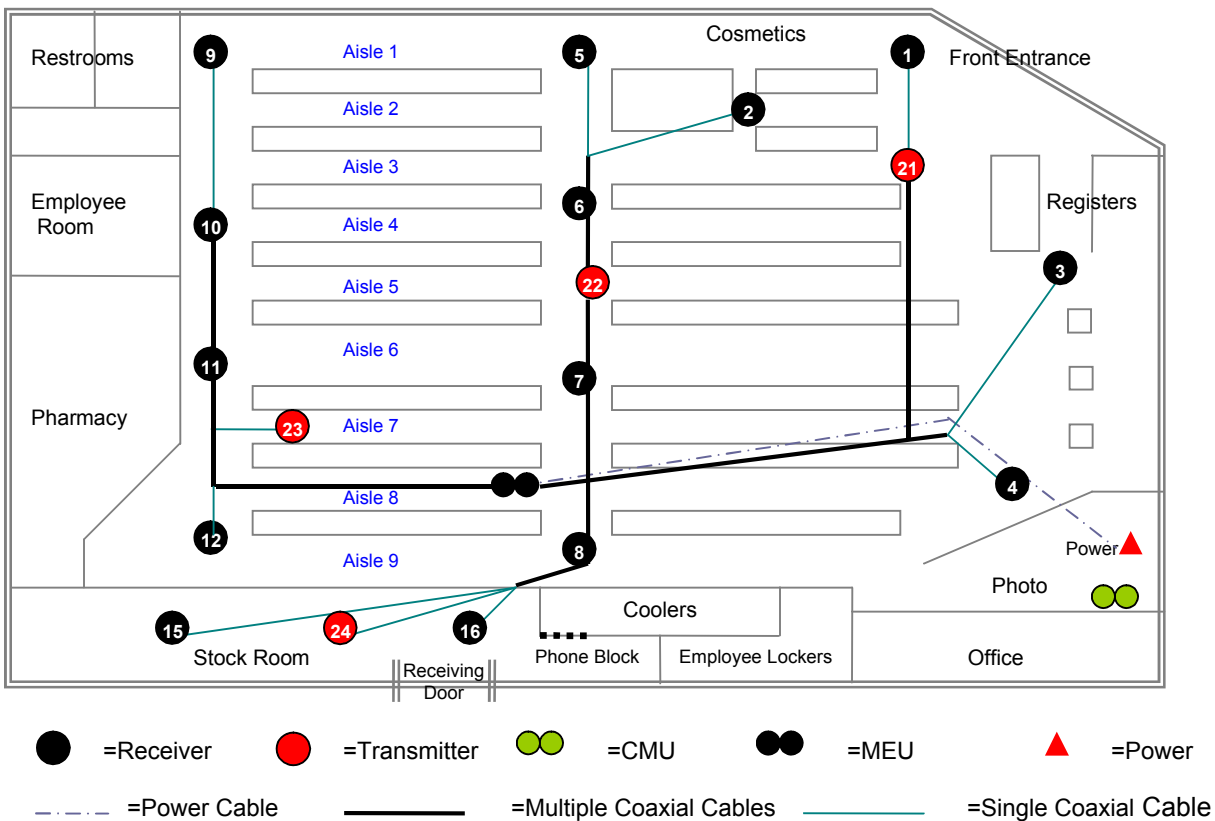
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Cable Pulls:

The following two examples are of the most common floor plans for a cable pull for a 9-aisle store. In the first example, the MEU will be mounted on the post in Aisle 8 and the CMU will be installed near the network switch located in the store's photo lab. The power for the MEU is coming from the CMU in the front of the store in the Photo area.

Side Stock Room (Example using four pulls)

- 1) Front Pull – consists of cables 1, 3, 4, 21, and power.
- 2) First Middle Pull – consists of cables 8, 15, 16, and 24.
- 3) Second Middle Pull – consists of cables 2, 5, 6, 7 and 22.
- 4) Back Pull – consists of cables 9, 10, 11, 12, and 23.



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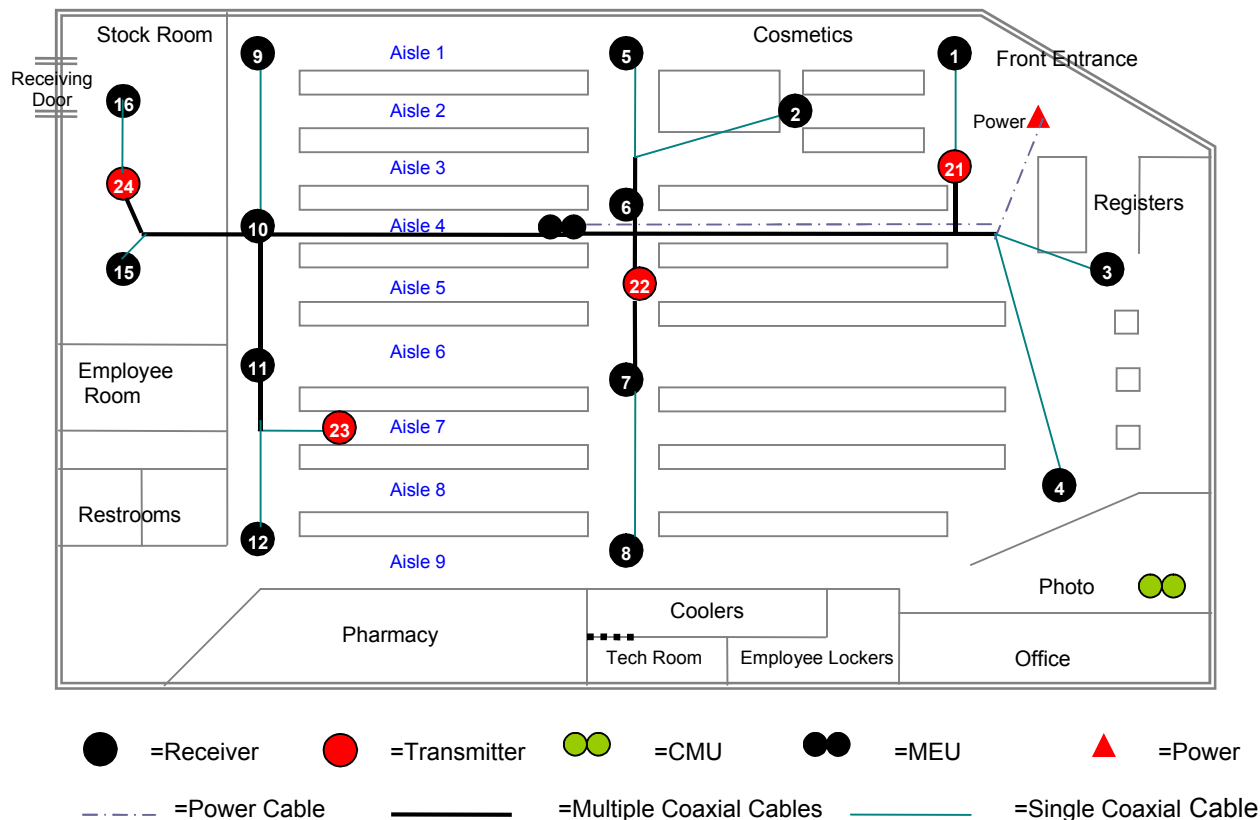
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In the second example, the MEU will be mounted on the post in Aisle 4 and the CMU installed by the network switch located in the store's photo lab. The power for the MEU is coming from an open outlet in the ceiling near the security screen that is located by the front entrance of the store.

Back Stock Room (Example using four pulls)

- 1) Front Pull – consists of cables 1, 3, 4, 21, and power.
- 2) Back Pull – consists of cables 9, 10, 11, 12, 23 and pull the stock room cables 15, 16, and 24.
- 3) First Middle Pull – consists of cables 2, 5, and 6.
- 4) Second Middle Pull – consists of cables 7, 8 and 22.



When performing the cable pulls it is imperative that they are done as efficiently as possible. This means that the number of pulls should be minimized as much as possible.

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Cable Installation Requirements:

The following requirements are the minimal standards for any installation of the GOLIATH System within the Walgreens Environment. Please review the "Best Practice Do's and Don'ts" which are found in the *Appendix B- Support Documents*. The mandatory standards are:

- All cables must be run through the roof girders.
- The label on both ends of the cable must match the correct antenna location and the correct port on the MEU.
- If the roof girders are too high, they must be routed through existing bridal rings or suspended from roof girders using wire hangers.
- Exception ceiling where roof girders are not available, like a concrete ceiling, will be handled on an exception basis. For clarification, contact the Help Desk prior to installation.
- Cables may never be attached to wires supporting the ceiling grid.
- Cables may never touch any water or gas pipes. At a minimum, the cables need to be 1 inch from the pipe. Be sure to allow for sag.
- Cables may never touch any threaded support rods.
- Cables cannot be supported by HVAC equipment.
- Cables are not allowed to be lying directly on top of ceiling tiles.
- Receivers must be secured to the ceiling tile in the store or attached to the roof girder in the stock room.
- MEU's must either be secured to a center post or be suspended from the roof girders.
- A minimum service loop will be fixed at the MEU to facilitate the installation. All additional excess cable will be in a service loop at the antenna location.
- All service loops must be self supporting and secured by a minimum of two cable ties. The service loop is not allowed to rest on the ceiling tile.
- The service loop should be no less than 10 inches diameter "About the size of a volley ball".
- Use only clear or white cable ties. The only exception to clear or white ties is the 36" cable tie provided for the mounting of the MEU.
- Cable ties must be trimmed.

Any deviation from the above is a violation and will require correction by the CIT in a follow up visit.

Uncoil/unroll the cable prior to pulling the cable to ensure that you do not have any kinks. If there are kinks in the cable you may damage the cable when pulling it. When pulling the cable, be careful not to pull too hard or force the cable when pulling it. This could easily damage the internal cable or the connectors at the end of cable.

The cable run with the power for the MEU should be the first pull.

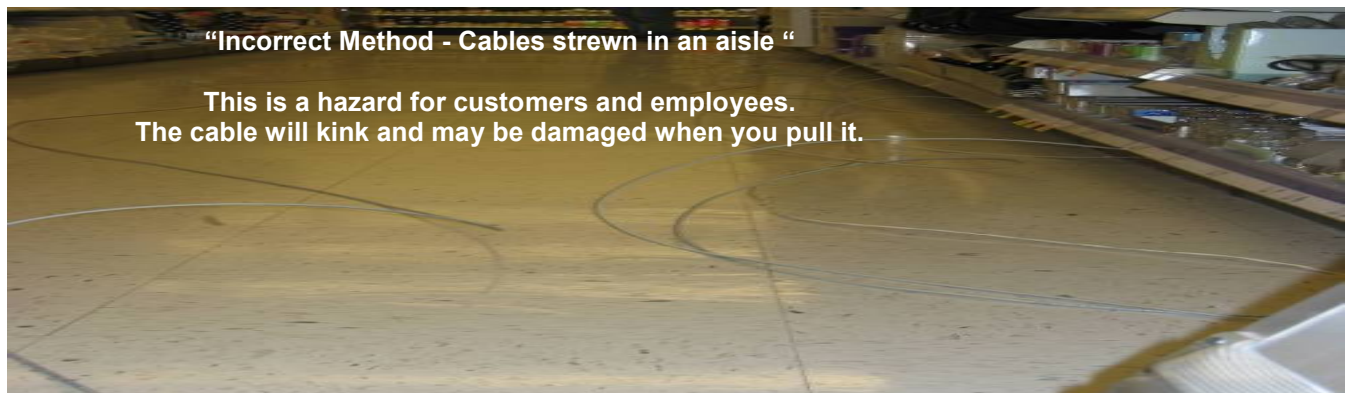
The cable run for stock room should be your second pull.

Other important requirements are, but are not limited to:

- Do not bend cables at a sharp 90 degree angle since this will damage the cables.
- Care must be taken not to over tighten the cable ties so the internal cable does not break.

Cable Pull Procedure:

- 1) All cables must be labeled approximately 6 inches from each end of the cable. This label will designate the port on the MEU and the antenna in which the cable is to be connected. The Tx/ATA and Rx/ARA locations can be marked on the floor as per the Pre-Installation Store survey.
- 2) If you extend a cable, move the label from the end of the original cable to the end of the extended cable.
- 3) Uncoil/unroll previously labeled coaxial cables down the aisle and then around the end cap into the next aisle. Only uncoil the cables required for your current cable pull.
 - If you are pulling the cable run that includes the power cable you need to remember that the power cable has a male and female end. You must pull the power cable in the correct direction. The male end of the power cable will go the MEU and the Female end will go to either the power supply or the power output port on the CMU.

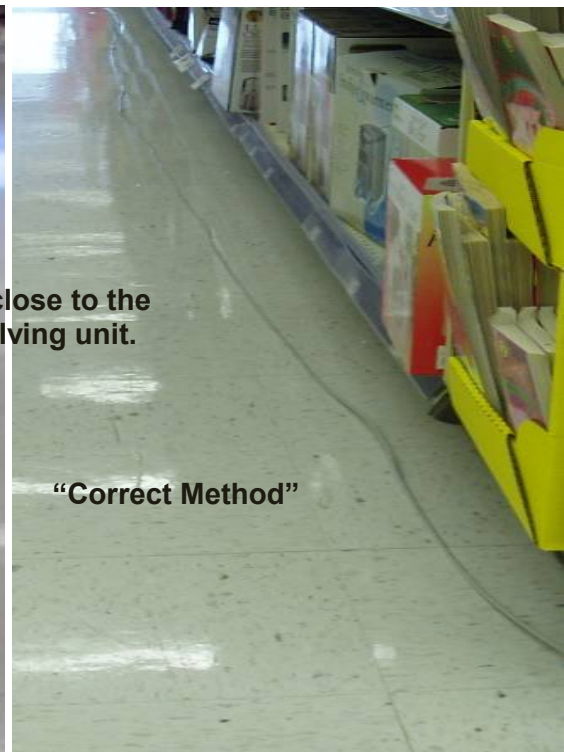


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Cables uncoiled close to the kick-plate of shelving unit.



NOTE: It is easier to run this cable if it is uncoiled prior to attempting a pull. All cables are to be uncoiled down the aisle, around the end of the end cap of the aisle, then up the adjacent aisle. Make sure there are no twists in the cable and that it is as close to the kick-plate under the shelving as possible to minimize hazard. This will keep it out of the way of any customers and employees needing to navigate these aisles. Be careful not to pull the cable bundle if it is snagged on anything as this could severely damage the cable. In this case, the cable must be manually dislodged.

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- 4) Begin running the supplied cable through the roof girders as efficiently as possible while utilizing Best Practices.
 - Coaxial cables are easily broken. If you pinch the line or bend it tightly, the inner-core will break (the shielding will appear stressed). To ensure this does not happen, it is best to uncoil the cable prior to beginning the cable pull.
- 5) Cables should be secured at each end with a required service loop at the point of termination:
 - At the MEU, a minimal amount of cable will be left to facilitate a service loop to be used during maintenance, if applicable. The remaining excess cable length will have a service loop at the antenna and must be coiled and secured to itself using a minimum of two cable ties per loop.
 - The service loop must be free-floating at a minimum of 12 inches above the termination point.
 - The service loop should be formed in order to facilitate future maintenance.
 - Under no circumstances should a service loop be attached to a support wire for the ceiling grid.
- 6) Cables pulled from the store into the stock room must adhere to the following standards:
 - Use an existing opening from the store to stock room if possible. Many times there is an opening by the bottom of a roof girder.
 - Do not use any existing opening that has power conduits, water pipes or AC ducts running through it.
 - If you need to cut a new hole through the wall for the cables, use the appropriate tool such as a drywall saw or hole saw to cut the hole. Make the hole as small as possible, but big enough for the needed cables.
 - Under no circumstances are you to punch or kick a hole in the wall to run cables through. This will damage the wall.
 - If a firewall is present, then a firewall conduit sleeve is required to pull the cables into the stock room. You must also use Fire Stop (caulk) to seal around the sleeve. Follow the procedure specified by the manufacturer to install the firewall conduit sleeve and use all the recommended fittings.

7) Cables running greater than 110 feet will require an F to F BNC coupling to a second cable. Use ONLY a 25 foot coaxial cable for extension:

- Tx/ATA antennas can only support cable lengths up to 110 feet.
- Rx/ARA antennas can only support cable lengths up to 135 feet.
- Only use the BNC coupling and 25 foot coaxial cable to extend a 110 foot coaxial cable.
- If after pulling a 110 foot cable it is found too be short, then add a 25 foot cable to facilitate the extra length needed. Do not pull on the coupling of the cables. Do not extend a Tx/ATA cable beyond 110 foot.
- Move the cable label to the end of the extension cable. A cable label must be at the MEU end and the Antenna end of each cable.
- Wrap electrical tape firmly around the coupled connection to insulate from any possible loosening or electrical short.
 - Turn each connector on the end of the coaxial cable clockwise to attach the cables to the BNC connector.
 - About 1" past the right side of the connection, wrap electric tape in clockwise motion around the cable and connection.
 - When you get to the left side of the connection be careful not loosen the connection as you finish taping. The clockwise motion of applying the tape will loosen the left cable connector if you are not careful. If you loosen the connection, the cable will fail and result in degradation of system functionality.

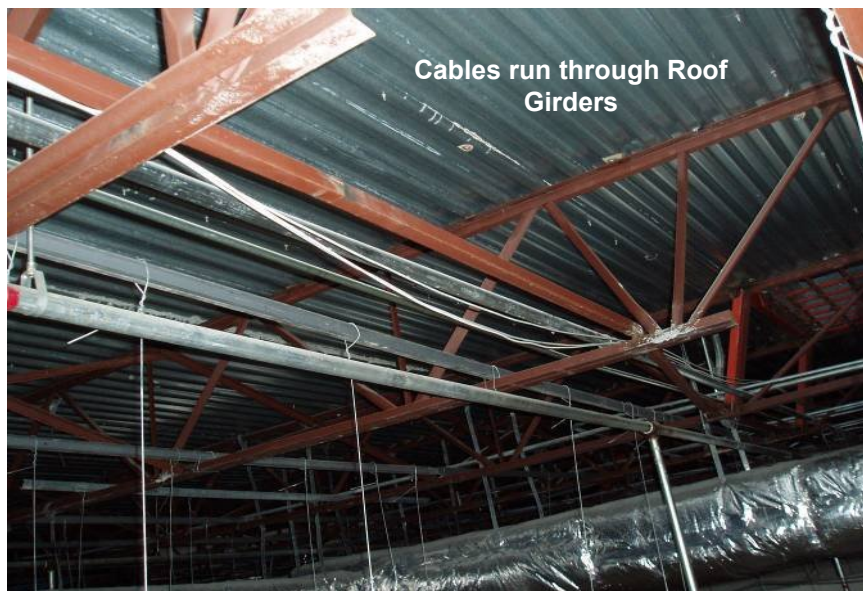


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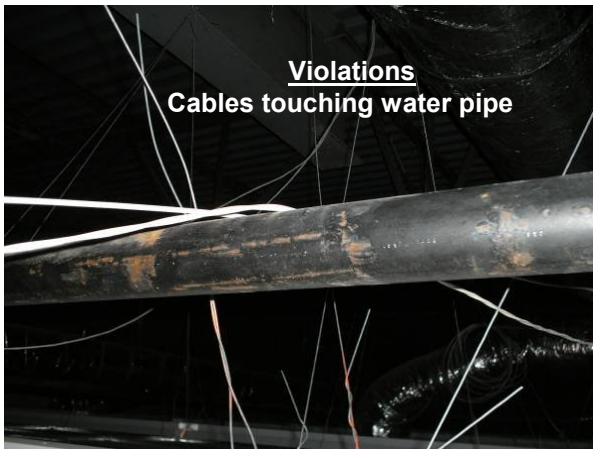


Correct Cable Installations:



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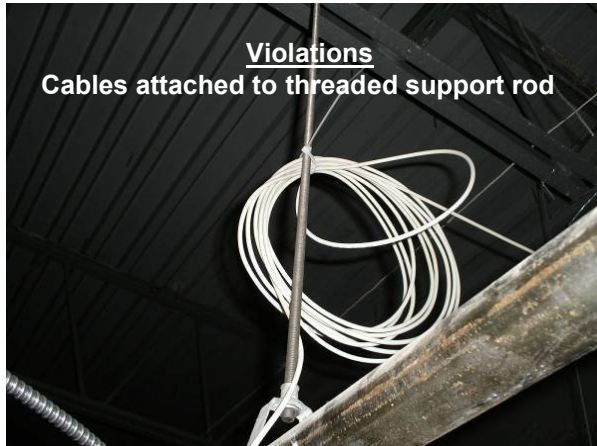
In-Correct Cable Installations (Violations):



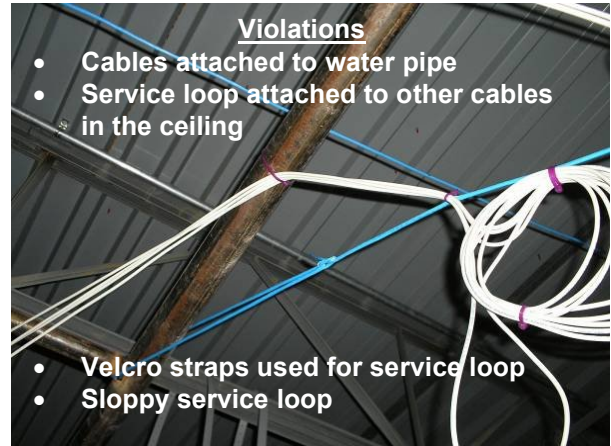
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Violations
Cables attached to threaded support rod

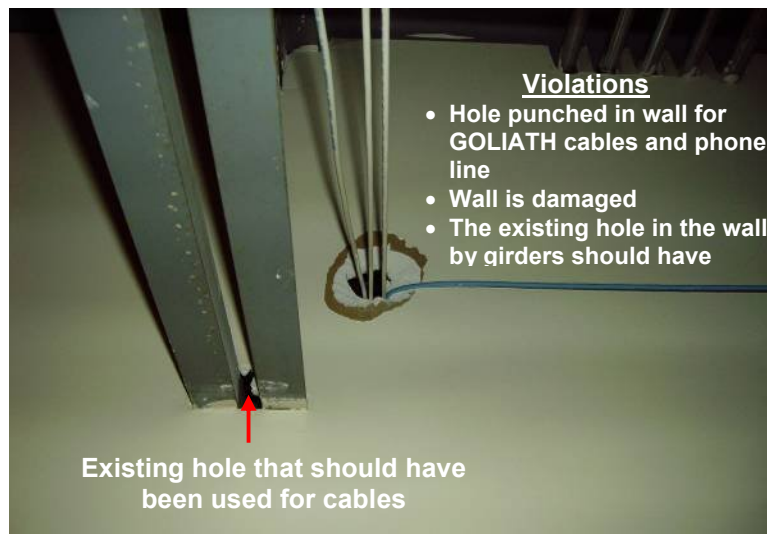


Violations

- Cables attached to water pipe
- Service loop attached to other cables in the ceiling

• Velcro straps used for service loop

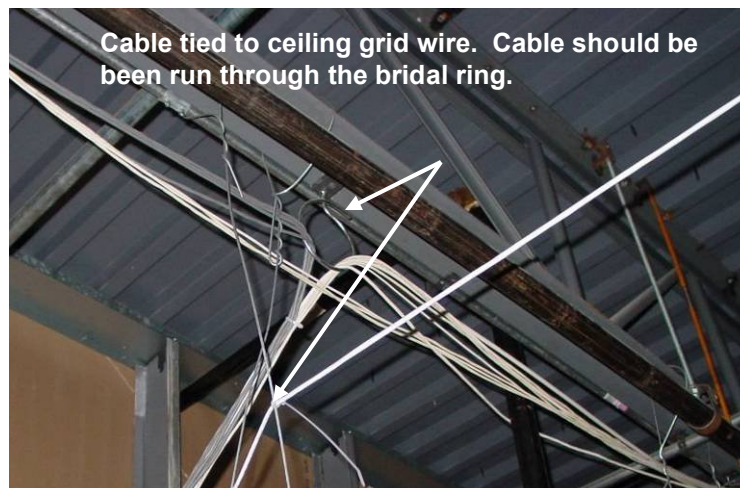
• Sloppy service loop



Violations

- Hole punched in wall for GOLIATH cables and phone line
- Wall is damaged
- The existing hole in the wall by girders should have

Existing hole that should have been used for cables

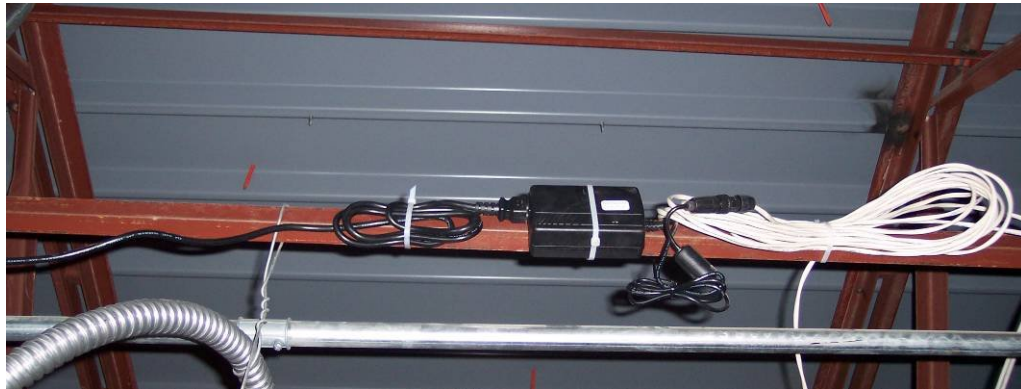


Cable tied to ceiling grid wire. Cable should be run through the bridal ring.

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CMU/MEU Power Cable:

- 1) The CMU/MEU Power Cable will be pulled to one of three locations. The approved locations are:
 - The first choice is an open outlet in the ceiling near the security screen that is located by the front entrance of the store. Use this location if it is available. This location requires a CMU/MEU Power Supply.
 - The second choice is the output power port on the back of the CMU. This location does not use a second CMU/MEU Power Supply to power the MEU.
 - The last option is by the Communications area in the store. The store will normally have either a tech room or a phone block located in the stock room. This area normally has open uninterrupted 24-hour power outlets. Only use this area if the first two options are not available. **This location must be approved by the Help Desk prior to beginning of the installation.**
- 2) The CMU/MEU Power cable should be pulled with the other cables pulled to the same section of the store. Normally with the front pull.
- 3) Remember **the power source for the MEU must be an open uninterrupted 24-hour power source**. It can not be plugged into a cube tap, power strip or a UPS used by a LAN cabinet or computer.
- 4) The power brick must be secured at it designated location. Use Velcro inside the Catalina cabinet and if the power supply is in the ceiling it must be secured to roof iron with cable ties. If the power brick is installed on the roof iron install a Goliath Solutions grid label sticker on the drop ceiling grid to indicate its location.

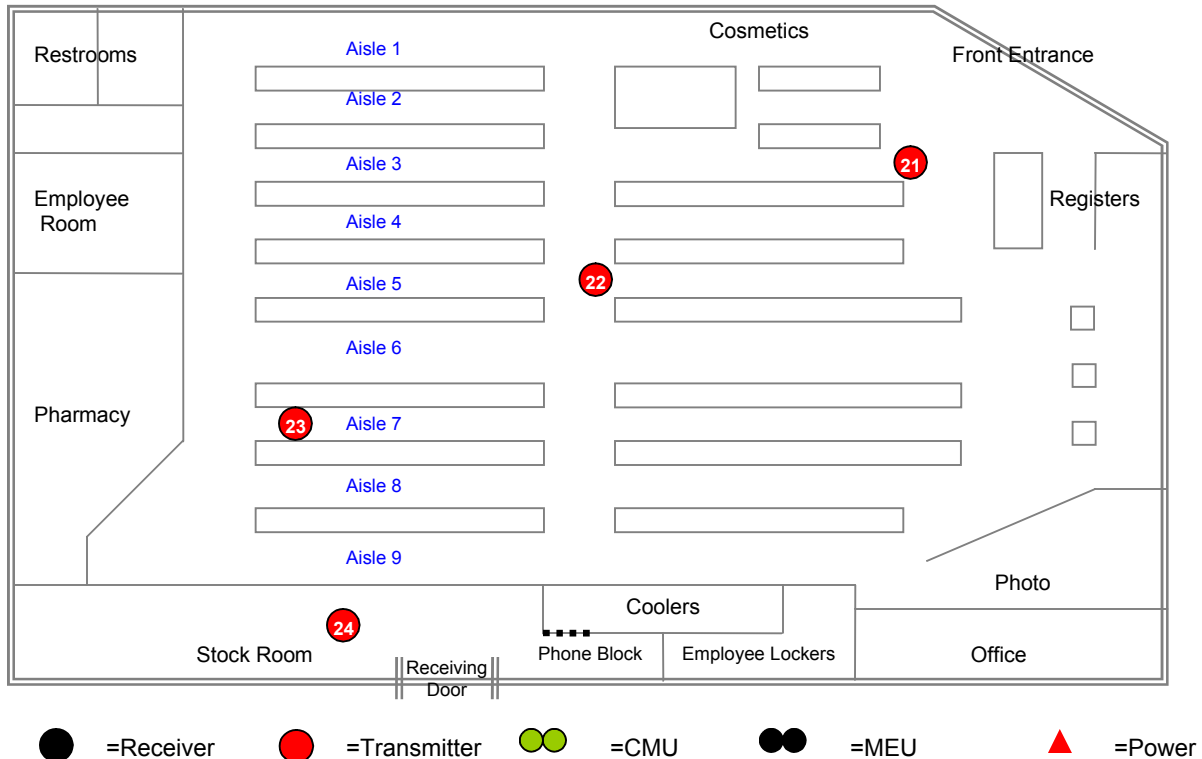


- 5) When pulling the CMU/MEU Power Cable to the CMU location the following requirements must be met.
 - The CMU/MEU Power Cable must use the same entry method into the Catalina cabinet as the network cables.
 - **If a pull string is in the ceiling above photo going into the Catalina Cabinet, the CIT can use this string to pull the cables into the cabinet. But the CIT is required leave a replacement pull string in place for the next technicians who may work on the Catalina cabinet to use.**
 - The CMU/MEU Power Cable will exit the Catalina Cabinet through the same knock out as the CMU/MEU low voltage power cable and the network patch cable to connect to the output power port on the CMU.
 - Do not connect the power cable to the MEU until all of the coaxial cables have been connected to the MEU and each antenna.

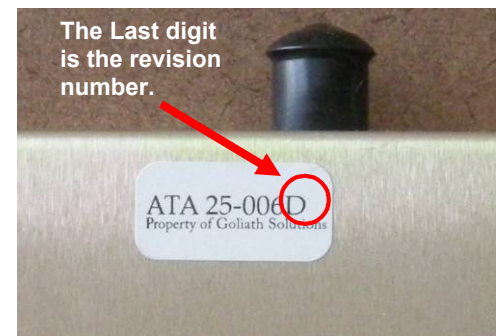
Tx/ATA Installation:

Installation of the Transmitter antennae (Tx/ATA) in the store:

- See Appendix A - Antenna Placement for specific antenna placement instructions and/or restrictions.
- Three Tx/ATA antennas will be installed over the Sales Floor (front, center, and rear).
- One Tx/ATA will be installed in Stock Room.
- The location of the Tx/ATA should be placed directly over the flooring, not over any fixtures or tables.



Note: Check the revision level of the Tx/ATA. Different revisions of the Tx/ATA may have been shipped to the store. On the Tx/ATA there is a sticker with the revision number on it. **Revision J or 3 must be installed in the stock room if available.** Revision D, J or 3 can be installed over the sales floor. Record the revision number of the Tx/ATA and the location where it is installed for the Help Desk.

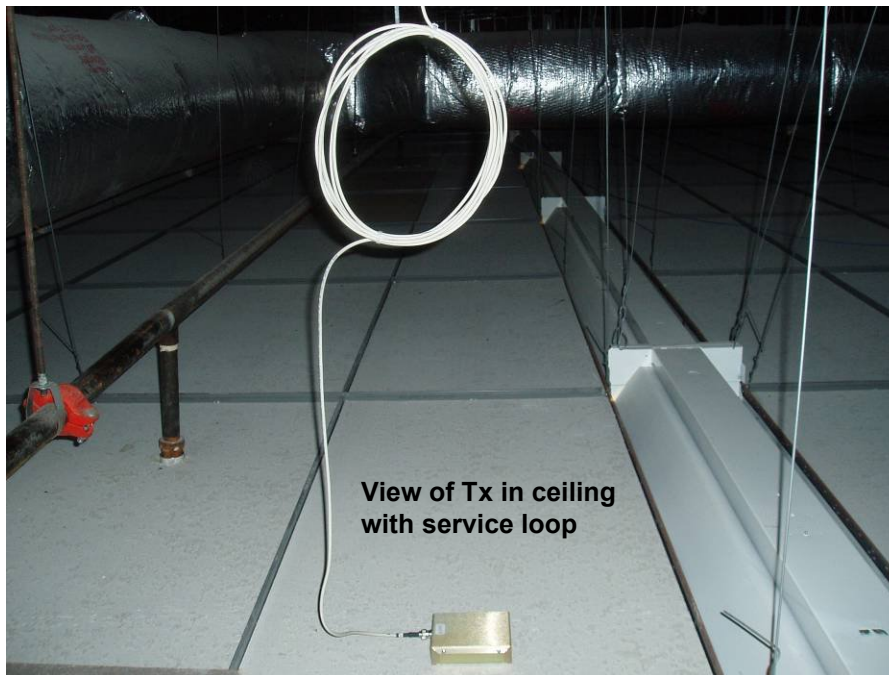


Installation of the Transmitters (Tx/ATA) over the Sales Floor:

- 1) Installation of the transmitters will require cutting a hole in the ceiling tile.
 - Be careful to center the antenna between any adjacent fixtures.
 - The Tx/ATA must always be placed on a full-size ceiling tile. This allows this tile to be relocated more easily if needed.
- 2) Use a 1-3/8" hole saw. Turn the hole saw counter-clockwise cutting a hole into the ceiling tile.
 - Do not cut holes near the edges of the ceiling tile as the tile will break.
 - Be careful to thoroughly clean the immediate area of any debris from the cut.
- 3) From the back side of the ceiling tile, screw the antenna into the tile.
- 4) Twist the supplied rubber gasket onto the exposed portion of the antenna. If the collar is loose and slides on the antenna then use a white or clear cable tie to keep the rubber gasket in position snugly against the ceiling tile.
- 5) Create the service loop per the previously stated standard and then connect the coaxial cable to the antenna.

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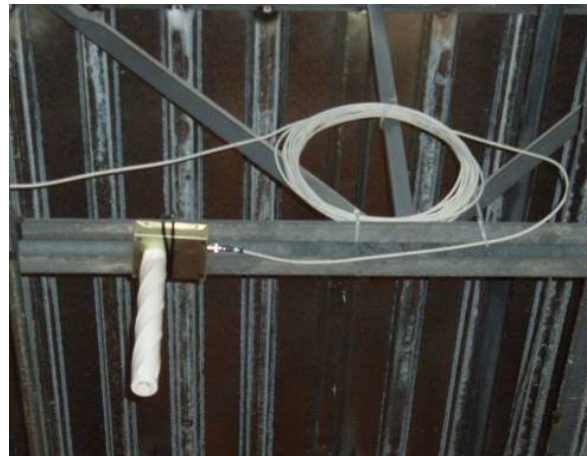


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Installation of the Tx/ATA antenna in the Stock Room:

- 1) Verify that the cable will reach the designated antenna location.
- 2) Mount the Tx/ATA to the roof girder at the designated location using cable ties.
 - The Tx/ATA must always be plumb.
 - The Tx/ATA and cable cannot touch any power conduit or any other pipes.
 - The Tx/ATA must have a clear line-of-sight from the center of the antenna directly to the floor. The Tx/ATA can not be mounted directly above pipes or conduit that obstructs the line of sight to the floor.
- 3) Create the service loop per the previously stated standard and then connect the coaxial cable to the antenna.
 - The excess cable at the antenna point of termination must be looped (coil should be no less than ten (10) inches in diameter) and secured to itself using cable ties. Be very careful not to kink or bend the cables
 - The loop must then be placed on top of the roof girder, directly above the antenna and secured to the girder via a cable tie.
 - Be careful not to tighten the cable tie to the point where the cable is pinched.

Correct Tx/ATA Installation in Stock Room:



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In-Correct Tx/ATA Installation Stock Room (Violations):



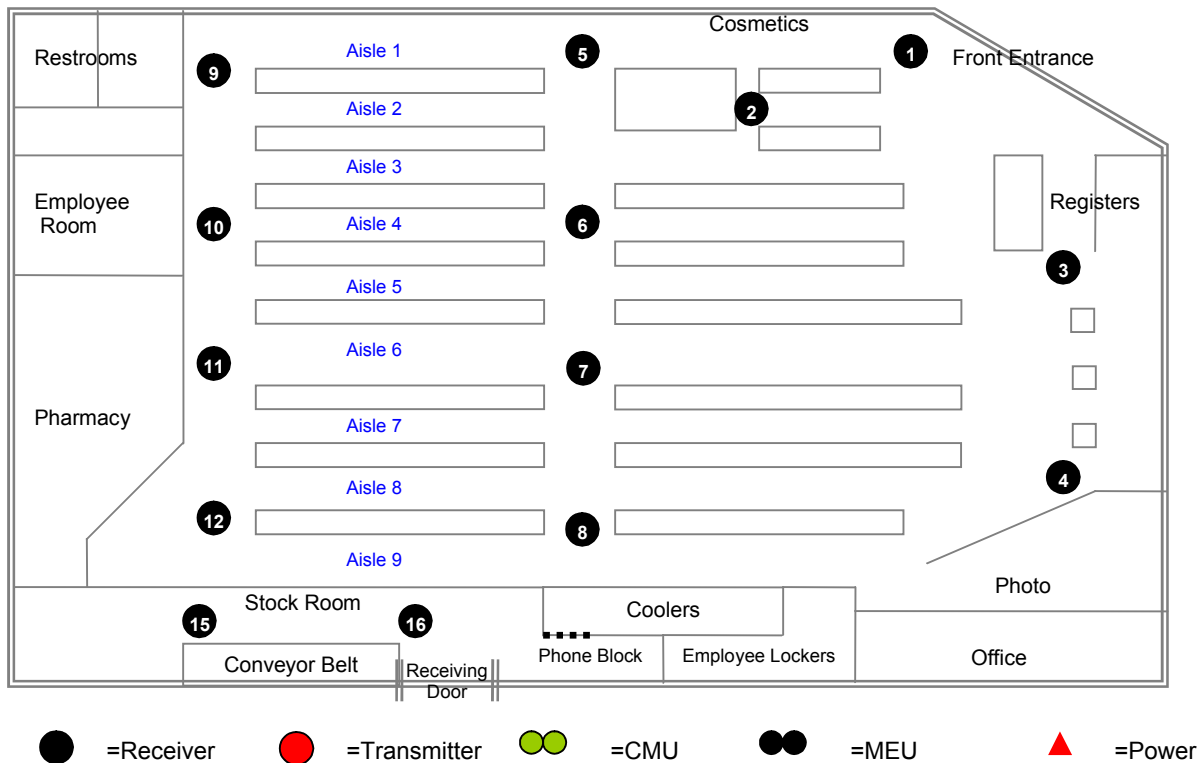
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Rx/ARA Installation:

Installation of the Receiver antennae (Rx/ARA) over the Sales Floor:

- See Appendix A - Antenna Placement for specific antenna placement instructions and restrictions.
- Twelve to fourteen Rx/ARA antennas will be installed over the Sales Floor.
- Two Rx/ARA antennas will be installed in the Stock Room.
- The antenna locations were determined by the store survey already performed by the Lead Technician.

Sample floor plan for Rx/ARA Installation



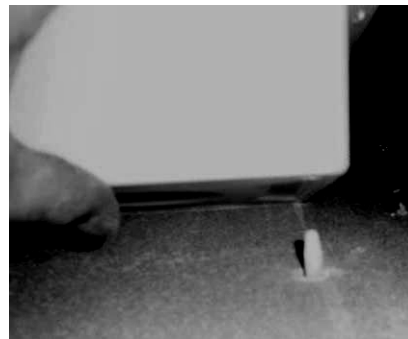
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Installation of the Rx/ARA over the Sales Floor:

- 1) At the designated location for the Rx/ARA make one hole using either an awl or #1 Phillips screwdriver in the exposed side of the ceiling tile. The hole should not be near the edge of the ceiling tile so you don't accidentally break the tile. The hole should be a minimum of 6 inches from the edge of the tile.
- 2) Push the Plastic mounting clip (Xmas tree fastener) into the exposed side of the tile through the hole to the backside of the tile.

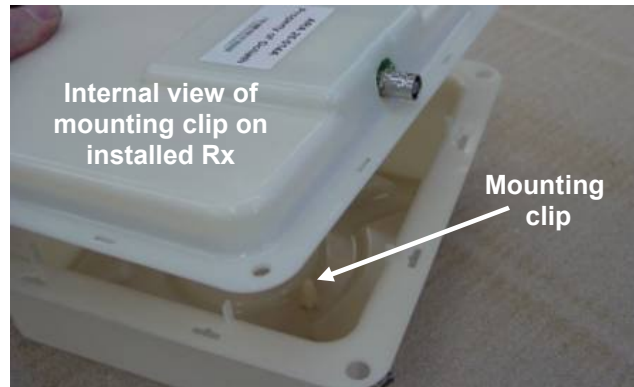


- 3) Lower the Rx/ARA onto the plastic mounting clip using one of the pre-drilled holes in the bottom of its casing. Push the Rx/ARA onto the plastic mounting clip so that the Rx/ARA is held firmly in place.
 - Be careful that the corner of the Rx/ARA containing plastic fastener be placed as close to the marking on the floor as possible, as once the plastic fastener is inserted into the ceiling tile, it cannot be removed without destroying the tile.
 - When attached the Rx/ARA can be rotated 360 degrees to adjust its position on the ceiling tile.



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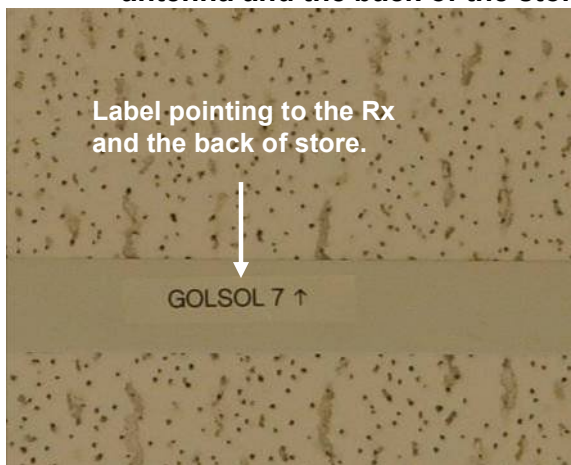
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- 4) Create the service loop per the previously stated standard and then connect the coaxial cable to the antenna. The self supporting service loop must be secured by a minimum of two cable ties. It should be 12 inches above the ceiling tile if possible.



- 5) Affix the correct ceiling grid label provided by GOLIATH onto the ceiling grid adjacent to the Rx/ARA location. **The arrow on the label must be pointing toward the antenna and the back of the store.**



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